



PREVALENCE AND ASSESSMENT OF FACTORS CONTRIBUTING FOR DISCONTINUATION OF ORTHODONTIC TREATMENT IN REMOVABLE APPLIANCE THERAPY

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Article History: Received: 12.12.2022

Revised: 29.01.2023

Accepted: 15.03.2023

Abstract :

Introduction:

The aim of the study is to assess the prevalence of factors contributing for discontinuation of orthodontic treatment in removable appliance therapy. Malocclusions are substantially resulted due to environmental and inheritable factors. It can be inherited in nature which means it can be passed down from one generation to the next. But this can bring on some oral habits too. Especially thumb or finger sucking, pacifier use for a longer period and mouth breathing are most common oral habits that can cause malocclusion. Sports injuries, automobile and fall accidents can also lead to this. A course of orthodontic treatment could be considered as successfully completed if the aims of the treatment have been fully achieved and an adequate retention period has been completed. A patient who does not go through the whole of this process is considered a discontinued patient. Removable appliances are, by definition, orthodontic appliances that can be inserted and removed by the patient.

Materials and Methods:

A clinic based review study was directed with the treatment records, from the division of Orthodontics, at saveetha dental school. Data in regards to age, gender, sort of malocclusion, machine type, span of treatment, extraction versus nonextraction, phase of treatment, and the expense of treatment was acquired from the patient's records. Measurable examination was performed utilizing the factual programming

Results:

A sum of 250 treatment cases, with an age scope of 6-25 years, were examined and 90 case's were recorded as discontinued treatment and 160 cases were distinguished as effectively finished treatment. Among the stopped patients, 49.6% were male patients and 50.4% were female patients. The most elevated suspension rate was seen in the gathering of 12-17 years old and it was measurably critical. In the evaluation of malocclusion among the gathering of discontinuing treatment, 53.6 % were of Class II division 1 malocclusion and 47% had Class I malocclusion. Among the discontinued patients, 62% were treated with basic removable machines and 38% with functional appliances.

Conclusions:

youngsters who are treated with removable machines are more inclined to suspend the orthodontic treatment during the beginning stage of dynamic treatment. This concentrate likewise affirms that how much monetary speculation has a positive connection with the consistency toward orthodontic treatment. It ought to likewise be focused on that these variables are not outright indicators for the stopping of orthodontic treatment except if affirmed with additional examinations with a more extensive example. Thus, while thinking about this multitude of contributory variables, it might be about time to foster a mental based poll that might assist with deciding the patient's perspectives and inspiration toward successful treatment.

Keywords: Removable appliance, discontinuing, discomfort

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DOI: 10.31838/ecb/2023.12.s2.050

1. Introduction:

Malocclusion of the teeth is a misalignment condition where teeth diverge from ideal occlusion that can bring about serious aesthetic issues and oral health complications. The teeth won't be suitable to perform important functions when they're misaligned. Malocclusions are substantially resulted due to environmental and inheritable factors¹. It can be inherited in nature which means it can be passed down from one generation to the next. But this can bring on some oral habits too. Especially thumb or finger sucking, pacifier use for a longer period and mouth breathing are most common oral habits that can cause malocclusion. Sports injuries, automobile and fall accidents can also lead to this². A course of orthodontic treatment could be considered as successfully completed if the aims of the treatment have been fully achieved and an adequate retention period has been completed. A patient who does not go through the whole of this process is considered a discontinued patient. Removable appliances are, by definition, orthodontic appliances that can be inserted and removed by the patient³. They comprise a number of components. Removable appliances work by simple tipping movements of the crowns of the teeth about a fulcrum close to the middle of the tooth^{3,4}.

Malocclusion is neither a sickness nor a life-threatening condition and generally isn't serious enough to require treatment. But there has been a considerable demand for orthodontic care. It's generally diagnosed through routine dental examination. In a child's life, the period of eruption in permanent teeth must be considered critical. Depending on the classification of malocclusion, the symptoms of the disorder may be subtle or severe. Furthermore, the treatment of malocclusion places a considerable burden on health care resources nationally and globally, significantly when treatments are funded by public means. Malocclusions are one amongst the most studied problems in orthodontics, using completely different groups in several populations, generally to find out about its prevalence, causes and establishing treatment procedures⁵. The selection from potential alternatives treatments should ideally be based on well-known effective treatments, rather than be dependent on visible clinical impression. Removable appliance when used by a patient's compliance is of key significance for successful outgrowth as orthodontic treatment generally carried out in a variety of age groups and in a multitude of problems, a great number of external and internal factors can impact the compliance⁶. Compliance is generally poor in young patients anyhow of their gender and psycho-logical maturity. The complexity

of factors discourage- mining patient's makes the assessment of compliance a difficult task for research purposes. Literature has suggested that grown-ups are more critical of dental esthetics and report an advanced need of orthodontic treatment than children⁷.

Adult patients are presented with numerous modalities for orthodontic remedy including but not limited to fixed appliances and removable appliances. Pain and discomfort are the recognized effects of orthodontic treatment which can impair compliance of case and can lead to avoidance or even discontinuation of treatment.

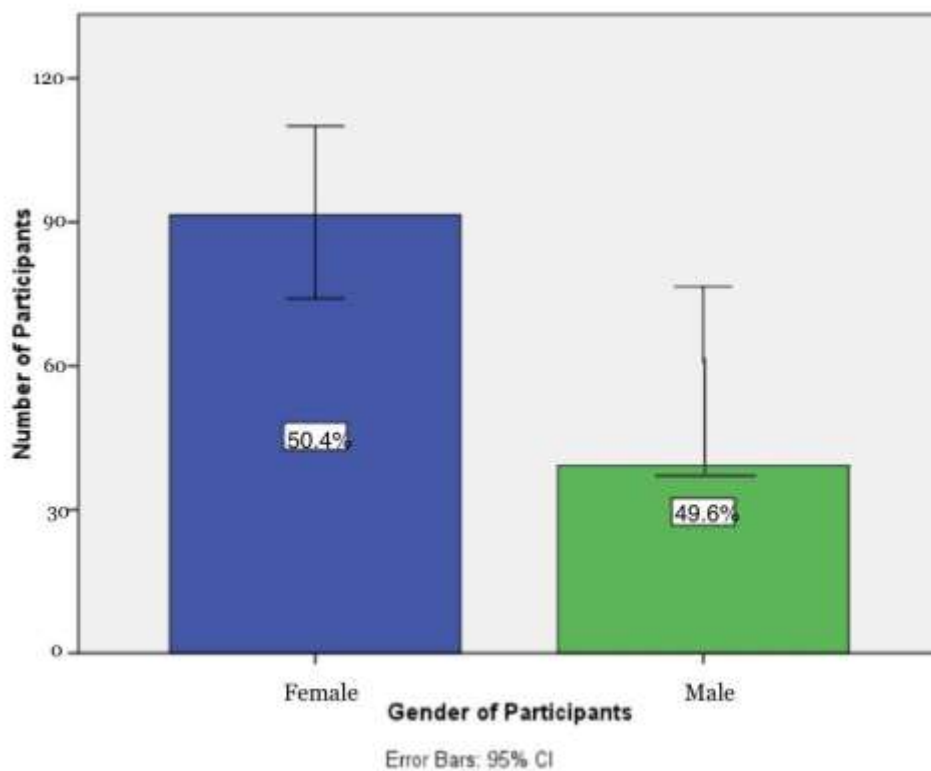
Advantages of removable appliances- They are removable and therefore easier to clean, They can provide increased vertical and horizontal anchorage due to palatal coverage, They can produce efficient overbite reduction in a growing child, They can transmit forces to blocks Disadvantages of removable appliances- The appliances can be left out, Only tilting movements are possible, They affect speech, A technician's input is required to make the appliances, Intermaxillary traction is more difficult, They are inefficient for multiple tooth movements, Lower removable appliance are more difficult to tolerate reduction in a growing child, They can transmit forces to blocks of teeth lower removable appliances, generally these are more difficult to tolerate due to encroachment on the tongue space. Retention of the appliance can also be a problem as the lingual inclination of the molars makes clasping difficult.

2. Materials and Methods

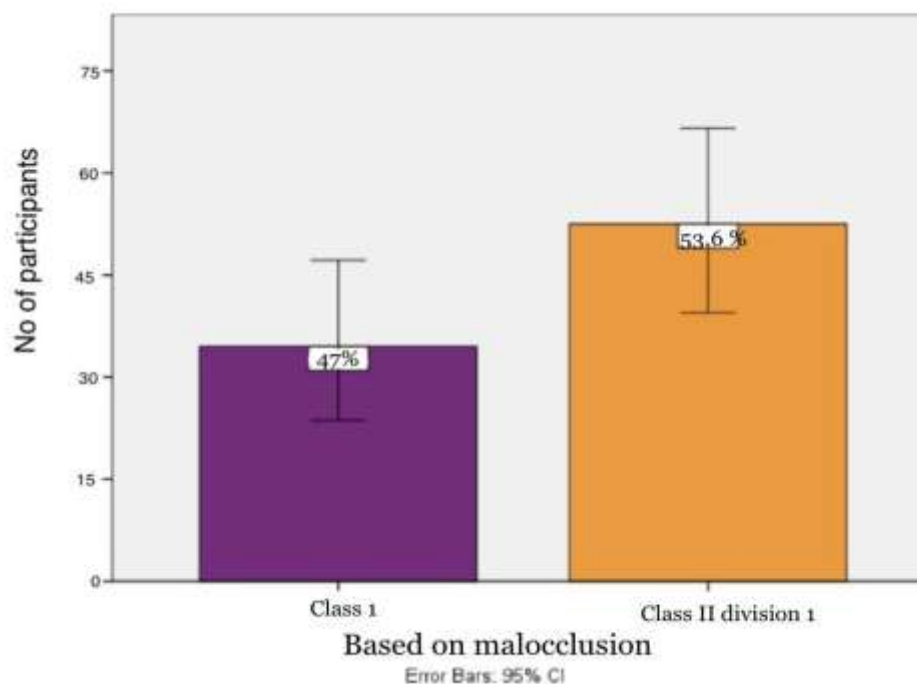
A clinic based review study was directed with the treatment records, from the division of Orthodontics, at saveetha dental school . Data in regards to age, gender, sort of malocclusion, appliance type, span of treatment, extraction versus nonextraction, phase of treatment, and the expense of treatment was acquired from the patient's records. Measurable examination was performed utilizing the factual programming Descriptive statistical analysis and Chi Square test for comparison of parameters were used and P value is calculated.

3. Results and Discussion-

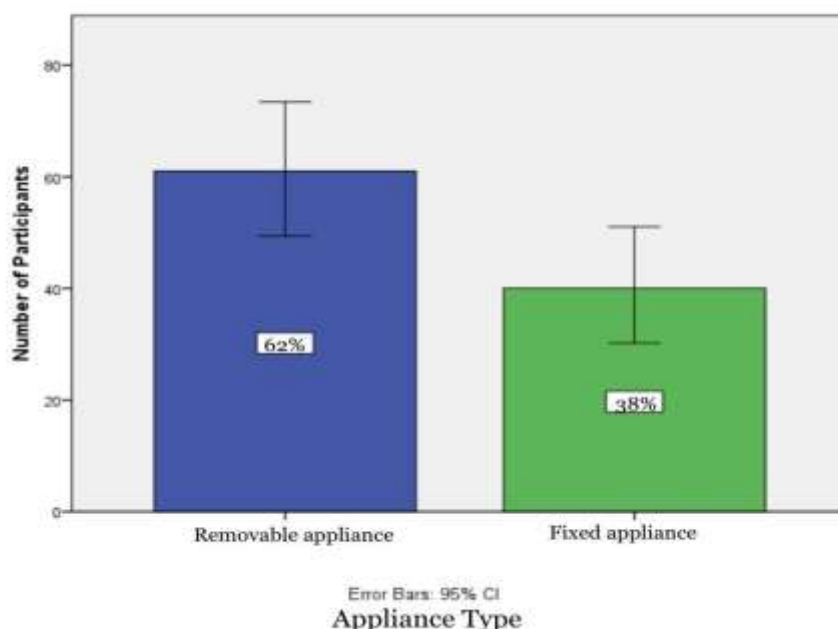
A sum of 250 treatment cases, with an age scope of 6-25 years, were examined and 90 case's were recorded as discontinued treatment and 160 cases were distinguished as effectively finished treatment. Among the stopped patients, 49.6% were male patients and 50.4% were female patients. The most elevated suspension rate was seen in the gathering of 12-17 years old and it was measurably critical.



In the evaluation of malocclusion among the gathering of discontinuing treatment, 53.6 % were of Class II division 1 malocclusion and 47% had Class I malocclusion.



Among the discontinued patients, 62% were treated with basic removable machines and 38% with functional appliances.



The consequences of the current study have shown higher suspension rate in the preadolescent age (12-17 years) group than different gatherings and the mean time of end was around 12.5 ± 4 , which was measurably critical. Affirming our discoveries, a

portion of the investigations have likewise revealed that more youthful patients have a higher stopping rate than the more established patients. Nonetheless, a few specialists have recognized that grown-up patients show more participation toward orthodontic

treatment than more youthful patients and a few examinations have featured the positive relationship old enough and consistency of orthodontic patients.

The discontinuation rates in the two male and females of the current study were viewed as almost equivalent. Comparable orientation conveyance has been seen in a concentrate in a provincial example from North-Focal Appalachia in the USA⁸. However, a few different examinations have distinguished a male prevalence among the people who suspended orthodontic treatment featuring better adherence to facial appearance, corresponding to engaging quality in females⁹.

The current study shows that patients with Class II division 1 malocclusion neglected to finish treatment contrasted to those with different malocclusions¹⁰. This finding could be because of the way that most patients who look for orthodontic treatment are with proclined upper incisors because of its aesthetic nature. Moreover, Class I malocclusion showed the second most elevated cessation rate contrasted with different malocclusions.^{11–20}

While considering the type of appliance is thought of, the most elevated level of discontinuation was related to basic removable appliances. Comparable outcomes were seen with a review done in everyday dental administrations of Britain and Grains. Patients who wore functional apparatuses likewise showed higher places of suspension than those with fixed machines²¹. McDougall additionally distinguished that most of the failed treatments were from the gathering of functional appliances contrasted with other orthodontic appliances. As a general rule, fixed machines were just inconsistently connected with suspension and this could be because of the overall simplicity of cessation with removable machines than with fixed apparatuses which require expulsion by a clinician.

There is a bigger disappointment pace of non-extraction patients with positive importance when contrasted and the patients who have gone through extractions for orthodontic purposes²². The comparative outcomes have been seen with the study done by McDougall, in 2017. Richmond additionally detailed that non-extraction treatment was more frequently suspended than extraction treatment with positive importance. Be that as it may, a few patients stop the treatment even after extractions²³. Thus, it is vital to consider this issue by the patients as well as clinicians to limit the end of treatment, particularly following extractions which might bring about more unesthetic appearance because of outstanding spaces.

In the appraisal of the relationship between the expense of treatment and suspension rate, the most elevated level of patients who neglected to finish treatment was the people who had acquired treatment with the least expense, which was genuinely huge. Significantly less suspension rate was seen when the treatment cost was high²⁴. These discoveries were additionally affirmed by the review led with a country test in North-Focal Appalachia. This finding makes sense of well with the mental disharmony hypothesis which suggests when one is keen on an undertaking (with cash or assets) it values undeniably, with more inspiration to achieve the errand effectively²⁵.

4. Conclusion-

In light of the consequences of the current study, it could be presumed that youngsters who are treated with removable machines are more inclined to suspend the orthodontic treatment during the beginning stage of dynamic treatment. This concentrate likewise affirms that how much monetary speculation has a positive connection with the consistency toward orthodontic treatment. It ought to likewise be focused on that these variables are not outright indicators for the stopping of orthodontic treatment except if affirmed with additional examinations with a more extensive example. Thus, while thinking about this multitude of contributory variables, it might be about time to foster a mental based poll that might assist with deciding the patient's perspectives and inspiration toward successful treatment.

Author Contributions

Dr. Yazhlini collected data for the study and authored the report after conducting the requisite statistical analysis.

Dr. Remmiya Mary Varghese assisted in the topic development, engaged in the study design, statistical analysis, and oversaw the paper production.

All authors discussed the results and contributed to the final manuscript.

Acknowledgement

This study was conducted under the supervision of the Department of Orthodontics at Saveetha Dental College and Hospitals. We would like to express our sincere gratitude to the guide and the institution for providing the insights and expertise that have been of great help to the investigation.

Conflict Of Interest:

. There was no potential conflict of interest.

. Source Of Funding : Jai constructions

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. Sciences, Saveetha University Chennai

5. Reference :

Murray AM. Discontinuation of Orthodontic Treatment: A Study of the Contributing Factors. *British Journal of Orthodontics* 1989; 16: 1–7.

Jiang R-P, McDonald JP, Fu M-K. Root resorption before and after orthodontic treatment: a clinical study of contributory factors. *The European Journal of Orthodontics* 2010; 32: 693–697.

Bhatt ZS, Sinha S, Patel D. Assessment of Contributing Factors for Discontinuation of Orthodontic Treatment: A Questionnaire Survey. *Journal of Indian Orthodontic Society* 2021; 55: 406–414.

Mainali A. Occurrence of Oral Ulcerations in Patients undergoing Orthodontic Treatment: A Comparative study. *Orthodontic Journal of Nepal* 2013; 3: 32–35.

Fox NA, Chapple JR. Measuring failure of orthodontic treatment: a comparison of outcome indicators. *J Orthod* 2004; 31: 319–22; discussion 301.

Jacobson A. Measuring failure of orthodontic treatment: A comparison of outcome indicators. *American Journal of Orthodontics and Dentofacial Orthopedics* 2005; 128: 140.

Dhakal J, Shrestha M, Shrestha M, et al. Comparison of Knowledge and Attitude Towards Orthodontic Treatment Among High School Students. *Orthodontic Journal of Nepal* 2019; 9: 61–65.

Rose JS. A thousand consecutive treated orthodontic cases--a survey. *Br J Orthod* 1974; 1: 45–54.

Kaur H, Izhar A. Can Orthodontic Informatics Combat the Pandemic Pitfalls? *Journal of Indian Orthodontic Society* 2020; 54: 389–390.

Janu A, Agrawal L, Singh K, et al. Periodontal Procedures adjunct to Orthodontic Treatment. *Orthodontic Journal of Nepal* 2015; 5: 42–45.

Neelakantan P, Grotra D, Sharma S. Retreatability of 2 mineral trioxide aggregate-based root canal sealers: a cone-beam computed tomography analysis. *J Endod* 2013; 39: 893–896.

Aldhuwayhi S, Mallineni SK, Sakhamuri S, et al. Covid-19 Knowledge and Perceptions Among Dental Specialists: A Cross-Sectional Online Questionnaire Survey. *Risk Manag Healthc Policy* 2021; 14: 2851–2861.

Sheriff KAH, Ahmed Hilal Sheriff K, Santhanam A. Knowledge and Awareness towards Oral Biopsy among Students of Saveetha Dental College. *Research Journal of Pharmacy and Technology* 2018; 11: 543.

Markov A, Thangavelu L, Aravindhan S, et al. Mesenchymal stem/stromal cells as a valuable source for the treatment of immune-mediated disorders. *Stem Cell Res Ther* 2021; 12: 192.

Jayaraj G, Ramani P, Herald J. Sherlin, et al. Inter-observer agreement in grading oral epithelial dysplasia – A systematic review. *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology* 2015; 27: 112–116.

Paramasivam A, Priyadharsini JV, Raghunandhakumar S, et al. A novel COVID-19 and its effects on cardiovascular disease. *Hypertension research: official journal of the Japanese Society of Hypertension* 2020; 43: 729–730.

Li Z, Veeraraghavan VP, Mohan SK, et al. Apoptotic induction and anti-metastatic activity of eugenol encapsulated chitosan nanopolymer on rat glioma C6 cells via alleviating the MMP signaling pathway. *Journal of Photochemistry and Photobiology B: Biology* 2020; 203: 111773.

Gan H, Zhang Y, Zhou Q, et al. Zingerone induced caspase-dependent apoptosis in MCF-7 cells and prevents 7,12-dimethylbenz(a)anthracene-induced mammary carcinogenesis in experimental rats. *J Biochem Mol Toxicol* 2019; 33: e22387.

Dua K, Wadhwa R, Singhvi G, et al. The potential of siRNA based drug delivery in respiratory disorders: Recent advances and progress. *Drug Dev Res* 2019; 80: 714–730.

Mohan M, Jagannathan N. Oral field cancerization: an update on current concepts. *Oncol Rev* 2014; 8: 244.

Karad A. *Clinical Orthodontics: Current Concepts, Goals and Mechanics*. Elsevier Health Sciences, 2014.

Turbill EA. Social inequality and discontinuation of orthodontic treatment: is there a link? *The European Journal of Orthodontics* 2003; 25: 175–183.

Turbill EA, Richmond S, Wright JL. Assessment of General Dental Services Orthodontic Standards: The Dental Practice Board's Gradings Compared to PAR and IOTN. *British Journal of Orthodontics* 1996; 23: 211–220.

Turbill EA, Richmond S, Wright JL. The time-factor in orthodontics: What influences the duration of treatments in National Health Service practices? *Community Dentistry and Oral Epidemiology* 2001; 29: 62–72.

Varghese RM, Subramanian AK, Sreenivasagan S, Others. Comparison of dentoskeletal changes in skeletal class II cases using two different fixed functional appliances: Forsus fatigue resistant device and powerscope class II corrector—A clinical study. *Journal of International Oral Health*. 2021;13(3):234.